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ABSTRACT

Children's understanding of the epistemological terms "know" and "guess" was investigated in two studies with four- to ten-year-old subjects. Two adult players guessed at the location of a ball hidden in one of two boxes. On each trial the child was asked questions about "knowing" and "guessing" both before and after the guessing took place. Questions using "know" were asked separately from those using "guess," to avoid the assumption of semantic oppositeness of these terms, an assumption which previous investigations have made. Responses were analyzed in relation to the pattern of correct/incorrect guesses on each trial, and whether or not one player actually observed the ball being hidden prior to guessing. Results indicated that younger children shifted between two acquired senses of "know" during the experiment: the sense of subjective certainty due to prior information, and the sense of correct conjecture, as determined by outcome. Further, younger children did not treat "know" and "guess" as opposites, but instead attribute both epistemological states to the correct player; later, "knowing" is attributed to the correct player, and "guessing" to the incorrect player. Not until age 9 or ten do children appear to be completely independent of outcome in their response to both questions. (Author)

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ACQUIRING DIFFERENT SENSES OF THE VERB to know

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Abstract

Children's understanding of the epistemological terms know and guess is investigated in two studies with 4-10-year old Ss. Two adult players guess at the location of a ball hidden in one of two boxes. On each trial the child is asked questions about knowing and guessing both before and after the guessing takes place. Questions using know are asked separately from those using guess, to avoid the assumption of semantic oppositeness of these terms which previous investigations have made. Responses are analyzed in relation to the pattern of correct/incorrect guesses on each trial, and whether or not one player actually observed the ball being hidden prior to guessing.

Results indicate that younger children shift between two acquired senses of know during the experiment: The sense of subjective certainty due to prior information, and the sense of correct conjecture, as determined by outcome. Further, younger children do not treat know and guess as opposites, but instead attribute both epistemological states to the correct player; later, knowing is attributed to the correct player. and guessing to the incorrect player. Not until age 9 - 10 do children appear to be completely independent of outcome in their response to both questions.

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After centuries of debate, philosophers generally agree on the definition of knowledge as justified true belief to distinguish knowledge from other beliefs which are either untrue or arrived at through invalid logic. However, in everyday dialogue we often assert that we "know" something when, in fact, this knowledge may not be objectively true. As A. J. Ayer⁽¹⁹⁵⁶⁾ put it, if we were to restrict our usage of the verb to know to only cases of justified true belief, we could rarely be said to know anything at all. In fact, there are numerous different senses of know in common usage. Possibly the most common of these is the sense of subjective certainty -- we assert that we know something when we have an internal representation of it that we consider to be accurate, although we may later acknowledge that it turned out not to be. Subjective certainty results from the acquisition of information, either through direct experience, or through communication with another individual. In asserting that we know something, we issue to the listener what Searle⁽¹⁹⁶⁹⁾ calls a "license to believe" that it is true; the listener does not, as a rule, apply rigorous truth and logic criteria to the statement before accepting its truth.

In this subjective sense of know, its meaning is the opposite of guess. In asserting that we are guessing, we withhold the "right to be sure" -- that is, we acknowledge that a sense of subjective certainty is lacking due to a lack of information.

Another frequent sense of know explicitly equates knowing with being

correct, as when, upon hearing thunder and the first drops of rain, we exclaim, "I just knew it was going to rain today and ruin our picnic!" What is asserted here is that a speculation or conjecture turned out to be correct. In this sense, guess is a synonym of know, since a frequently intended sense of guess, according to Webster, is also to "conjecture correctly," as in guessing riddles, or guessing someone's age.

There are other commonly used senses of know -- for instance, the sense of familiarity or acquaintance -- but we shall be concerned only with the subjective certainty and correct conjecture senses in this report.

What information is available to the child about what people mean when they say they know? Epistemological terms and other terms of subjective experience are developmentally interesting because they require the child to make inferences about the content of "other minds" in order to understand the speaker's reference. However, the sense of know as correct conjecture offers externally available cues to meaning which are seemingly not available with the alternative sense. We hypothesized that the sense of know which refers to a tangible aspect of external experience -- that is, to an observable, correct outcome -- should be understood earlier than the sense which refers to an intangible aspect of the subjective experience of the speaker. A common observation of preschool and elementary school teachers is that young children will eagerly venture a guess when asked if they know something. If our hypothesis is correct, this occurs because of the child's understanding of know as the correct outcome of guess, hence, the question "do you know" is interpreted as an invitation to guess.

We conducted two studies, the first with 120 4-10-year-olds, the second with 60 5-, 7-, and 9-year-olds. We will only discuss the second study here, which confirmed and extended the findings of the first. We played the ubiquitous "game" with our subjects in which the child hid a ball in one of two boxes and

two adult assistants, whom we shall call "players", had to guess where it was. Under "no observer" conditions, both adults turned away and covered their eyes while the child hid the ball; under "observer" conditions, one adult watched the child while the other turned away as before. After hiding the ball, the child was asked question 1 on page 1 of your handout; "Does either player know where to find the ball?" If the child said "yes" we asked "who knows?", and, when only one was indicated, we went on to ask, "Does the other player know, too?" The players then guessed the ball's location (although, I should note, this was not referred to as "guessing" during the experiment). The pattern of correct/incorrect "guesses" was systematically varied over trials under each condition so that either one or both player(s) were correct or incorrect on a single trial. This was accomplished through nefarious means which we won't go into here. The child was then asked a series of questions about whether either player was guessing and whether either player knew where to find the ball. They are given verbatim on page 1 of the handout.

While conducting the experiment, we were repeatedly struck by younger subjects' ability and readiness to use both senses of know in the task, and by their willingness to alternate between the two senses within a single trial. It became apparent that they were simply shifting between different senses of know as the circumstances within a trial shifted. Prior to having a guessing outcome on which to base the response, the children in each age group correctly applied the sense of know as subjective certainty based upon prior information. One or both players had covered their eyes during the hiding and were thus denied a knowledge base about the location of the ball. Row 1 of Table 1 shows that, when neither player observed and thus neither had prior information, 79-95% of the subjects in each age group replied that "neither player" knows on the pre-outcome question. When one player observed and thus possessed prior information,

QUESTIONS ABOUT KNOWING AND GUESSING

A. PRE-OUTCOME

1. "Does either of them know where to find the ball?"
 - a. If "yes"
"Who knows?"
 - b. If only one player indicated
"Does (other player) know, too?"

B. POST-OUTCOME

1. "Was either of them guessing where to find the ball?"
 - a. If "yes"
"Who was guessing?"
 - b. If only one player indicated
"Was (other player) guessing, too?"
2. "Did either of them know where to find the ball?"
 - a. If "yes"
"Who knew?"
 - b. If only one player indicated
"Did (other player) know, too?"

Row 2 of Table 1 shows that 84-100% of the children said that the "observing player" knows.

Immediately following the guesses, however, when the pattern of correct/incorrect outcomes became apparent, the children's responses to questions about knowing differed sharply from those in Table 1.

In Table 2, we see that, compared to the 79-85% of 5-and 7-year-olds who claimed that "neither player knows" prior to the outcome, only 30% said that neither player knew following the outcome. Instead, 62% of these subjects attributed knowing to the correct player and did not at the same time attribute knowing to the incorrect player. Although neither player possessed prior information, younger subjects attributed knowledge to the player who was correct, and they gave this response within moments of having given the seemingly incompatible response that neither player knew in advance of the outcome.

A similar, but less dramatic, shift in the sense of know occurred on trials in which one player observed. When the observing player guessed correctly, of course, the two senses of know converge on this player, who is both correct and had prior information. Row 1 in Table 3 shows that 83-100% of subjects indicate that the observing player knew under this condition. But when the observing player guessed incorrectly (probably inexplicably to the children), the two senses are in conflict. When this happened, 5-and 7-year-olds split their responses about evenly, sometimes saying that the observing but incorrect player knew, sometimes saying that the non-observing but correct player knew. Only the oldest children persisted in applying the prior information sense, maintaining that the observer knew despite the negative outcome, and the non-observer did not know, despite the positive outcome. (I should point out that this somewhat confusing condition was always the last one in the experiment.)

The contrast between Tables 2 and 3 in the percentage of younger subjects who interpreted knowing in terms of outcome points to the attenuating effect which the explicit introduction in the experiment of the notion of prior information had upon this tendency. The attenuation is seen more clearly in Table 4, for conditions in which both players were correct. A response that "both knew" is outcome determined, since it is correct outcome and not prior information that is shared by the players. In Rows 1 and 2 of Table 4 the percentage of subjects at each age giving the outcome based response is much smaller under observer conditions. With an observer, about half the younger subjects used the prior information sense in their post-outcome responses (Row 4) compared to the 18-30% who did so under the no observer condition (Row 3). Older subjects predominantly used the prior information sense under both conditions.

Finally, Table 5 shows the results when both players are incorrect. When neither player had prior information, 90-100% of the subjects denied that either player knew. However, either the lack of prior information or the incorrect outcomes could determine this response. In Row 2, it is clear that the outcome interpretation has the edge at the younger ages; when one player observed, 60% of 5-and 7-year-olds deny that either player knew when both were incorrect. Only 35% of the younger subjects attributed knowing to the observing player under this condition. Apparently, the fact that both players failed to locate the ball meant that neither of them knew for the majority of 5-and 7-year-olds. Nine-year-olds, on the other hand, continued to maintain that the observer knew, despite the negative outcome.

From these data, we draw the following conclusions about young children's understanding of the meaning of to know. Children as young as 5 and as old as 7 have a clear understanding of what it means to know in at least two of its vernacular senses -- the sense of subjective certainty due to prior information,

and the sense of correct conjecture, or the objective outcome of a guess. They are capable of applying both senses with precision under changing circumstances: They attribute knowing to whoever has advance information, and when neither person has advance information, neither is said to know. Once a guess is made and the outcome is apparent, however, another sense of know takes precedence. Now, whoever is correct is said to have known, and whoever is incorrect is said not to have known. If both are correct, both are said to have known, and if both are incorrect, neither is said to have known. This occurs regardless of whether either player possessed prior information and was said to know prior to the outcome. Older children, age 9 in our sample, do not shift between senses of know as readily. Instead, they consistently apply the prior information sense under both pre- and post-outcome conditions, maintaining at both points that only the player having advance information in fact knew, regardless of the outcome.

Thus, the developmental trend is not toward increasing competence with a "more mature" sense of know, but toward increasing consistency in maintaining a single sense of the term within the experimental context. What is immature about the younger children is their fickleness in the face of a tangible outcome. The salience of the outcome is apparently compelling, and they are seduced, if you will, away from a subjective sense of know in favor of an objective sense, even when the two senses lead to overtly conflicting responses at different points within the same trial. Thus, it is the relative preference for, not the relative competence with, the two senses of know which changes with age.

Now, to consider guessing. In assessing children's understanding of what it means to guess, our goal was to allow this term to be independently related to the experimental variables, rather than assuming it to be the opposite of know. Previous investigators (with the recent exception of Johnson & Wellman, 1980)

have posed questions about guessing in the disjunctive (asking, for example, "did you know or were you just guessing?"). We assumed that, as know and guess are not always antonyms in the language, so they may not contrast in child language either. Second, we used the progressive question format as shown in your handout in order to avoid the strong suggestion of guessing as correct conjecture which is implicit in the alternative syntax, "Did either of them guess"? In light of this precaution, the results are all the more surprising. Table 6 shows the percentage of children of different ages who gave various responses to the guess question under conditions of mixed outcome, that is, one player correct and one incorrect. When neither player observed, hence both players were subjectively guessing, only 17 and 11% of 5- and 7-year-olds, respectively, said that "both guessed". Instead, 59 and 46%, respectively, said that the correct player only guessed, and another 8 and 20%, respectively, said that the incorrect player guessed. Summing Rows 2 and 3, a total of 67% of 5-year-olds and 66% of 7-year-olds assigned guessing according to outcome rather than according to lack of information. This was also true when there was an observing player, as shown in Rows 4 and 5, where, summing rows, 60% of 5-year-olds and 45% of 7-year-olds attributed guessing to the observer -- not to the non-observer -- apparently on the basis of outcome. Table 7 shows a similar picture for conditions of shared outcome. When one player observed, a response that the non-observing player only guessed refers to the non-observer's lack of information, rather than to the shared outcome. While 60-72% of 9-year-olds gave this response, only 10-30% of the younger children did so. A much higher percentage of the younger subjects attributed guessing on the basis of correct or incorrect outcome. Altogether, 67-70% of 5- and 7-year-olds gave an outcome based response when both players were correct, and 75-85% of them gave an outcome based response when both players were incorrect.

There are two developmental trends evident in Table 7. One is toward increasing usage of the informational sense of guess with increasing age. The other is toward increasing use of the incorrect outcome sense of guess between the ages of 5 and 7. Seven year olds split their responses about evenly between correct and incorrect outcome interpretations of who was guessing.

To summarize our findings with respect to guess, at the youngest age, guessing was not distinguished from knowing, and was clearly not perceived as its opposite. The 5-year-olds predominantly attributed guessing to the same player or players to whom they attributed knowing, that is, to whoever was correct. Only later are the terms treated as opposites; about half the 7-year-olds who gave outcome based responses gave correct outcome interpretations of know and incorrect outcome interpretations of guess. That is, knowing was attributed to whoever was correct, while guessing was attributed to whoever was incorrect. The remaining 7-year-olds, like the 5-year-olds, gave correct outcome interpretations to both terms.

Thus, both subjective certainty and correct conjecture senses of know and guess are available in the language for the child to learn. Contrary to our hypothesis, the sense of correct conjecture, which refers to external rather than internal denotative events, is not necessarily learned first, but it is the preferred sense in contexts where there is a tangible correct outcome. Know and guess are treated as synonyms in this sense by 5-year-old children. Later, around age 7 or older, the semantic oppositeness of the two terms is recognized in the child's language in an unusual and strictly child-invented way: Being correct means to know, while being incorrect means to guess. Trying to reconcile the metalinguistic oppositeness of these terms with the motivation to relate them both to outcome, the child comes up with this unusual twist of the epistemologist's tongue.

References

Ayer, A. J. The problem of knowledge. New York: Saint Martin's Press, 1956.

Johnson, C. N. and Wellman, H. M. Children's developing understanding of mental verbs: Remember, know, and guess. Child Development, 1980, 51, 1095, 1102.

Searle, J. R. Speech acts: An essay in the philosophy of language. London: Cambridge University Press, 1969.

Table 1

Percentage* of "neither knows" or "observer knows" responses to PRE-OUTCOME question: "Does either of them know where to find the ball?"

<u>Condition</u>	<u>Response</u>	<u>Age</u>			<u>Sense of know indicated by response</u>
		<u>5</u>	<u>7</u>	<u>9</u>	
No observer	"neither knows"	79	85	95	Prior Information
Observer	"observer knows"	84	90	100	Prior Information

*For each age group, the percentage is based upon 280 observations.

Table 2

Percentage of "neither knew" or "correct player knew" response to POST-OUTCOME question: "Did either of them know where to find the ball?" under NO OBSERVER condition with mixed outcomes (one player correct, one incorrect).

<u>Response</u>	<u>Age</u>			<u>Sense of know indicated by response</u>
	<u>5</u>	<u>7</u>	<u>9</u>	
"neither knew"	30	30	66	Prior Information
"correct player knew"	62	62	32	Correct Outcome

Table 3

Percentage of "observer knew" and "non-observer knew" responses to POST-OUTCOME question: "Did either of them know where to find the ball?" under OBSERVER conditions with MIXED outcomes (one player correct, one incorrect).

<u>Condition</u>	<u>Response</u>	<u>Age</u>			<u>Sense of know indicated by response</u>
		<u>5</u>	<u>7</u>	<u>9</u>	
Observer correct	"observer knew"	83	90	100	Prior Information and/or Correct Outcome
Non-observer correct	"observer knew"	50	40	85	Prior Information
Non-observer correct	"non-observer knew"	45	40	10	Correct Outcome

Table 4

Percentage of different types of response to POST-OUTCOME question: "Did either of them know where to find the ball?" when BOTH players are CORRECT.

<u>Condition</u>	<u>Response</u>	<u>Age</u>			<u>Sense of know indicated by response</u>
		<u>5</u>	<u>7</u>	<u>9</u>	
No observer	"both knew"	72	70	32	Correct Outcome
Observer	"both knew"	50	43	12	Correct Outcome
No observer	"neither knew"	18	30	65	Prior Information
Observer	"observer knew"	45	45	88	Prior Information

Table 5

Percentage of "neither knew" and "observer knew" responses to POST-OUTCOME question: "Did either of them know where to find the ball?" when BOTH players are INCORRECT.

<u>Condition</u>	<u>Response</u>	<u>Age</u>			<u>Sense of know indicated by response</u>
		<u>5</u>	<u>7</u>	<u>9</u>	
No observer	"neither knew"	90	100	98	Prior Information and/or Correct Outcome
Observer	"neither knew"	60	60	20	Correct Outcome
Observer	"observer knew"	35	35	80	Prior Information

Table 6

Percentage of different types of response to POST-OUTCOME question: "Was either of them guessing where to find the ball?" under conditions with MIXED outcomes (one player correct, one incorrect).

<u>Condition</u>	<u>Response</u>	<u>Age</u>			<u>Sense of guess indicated by response</u>
		<u>5</u>	<u>7</u>	<u>9</u>	
No observer	"both guessed"	17	11	53	Lacking Prior Information
	"correct player guessed"	59	46	14	Correct Outcome
	"incorrect player guessed"	8	20	16	Incorrect Outcome
Observer correct	"correct player guessed"	45	25	12	Correct Outcome
Observer incorrect	"incorrect player guessed"	15	20	0	Incorrect outcome

Table 7

Percentage of different types of response to POST-OUTCOME question: "Was either of them guessing where to find the ball?" under conditions of SHARED OUTCOME (both players correct/incorrect).

<u>Condition</u>	<u>Outcome</u>	<u>Response</u>	<u>Age</u>			<u>Sense of <u>guess</u> indicated by response</u>
			<u>5</u>	<u>7</u>	<u>9</u>	
Observer	Both correct	"non-observer guessed"	18	30	72	Lacking Prior Information
Observer	Both incorrect	"non-observer guessed"	10	20	60	Lacking Prior Information
Observer	Both incorrect	"neither guessed"	80	35	20	Correct Outcome
Observer	Both correct	"neither guessed"	15	25	15	Incorrect Outcome
Observer	Both correct	"both guessed"	52	45	8	Correct Outcome
Observer	Both incorrect	"both guessed"	5	40	20	Incorrect Outcome
No observer	Both incorrect	"neither guessed"	75	68	30	Correct Outcome
No observer	Both correct	"neither guessed"	15	25	32	Incorrect Outcome